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ABSTRACT

A study compared the newly developed Interpersonal Complexity Sort (ICS) with the widely used measure of cognitive differentiation, the Role Category Questionnaire (RCQ). Both measures were tested for relationships between the two measures and between each measure and previous associated impression structure dependent measures. Using a trait presentation model, 94 undergraduates enrolled in three different universities were presented with target person descriptions. Then they produced subsequent written impressions. Impression structure dependent measures were derived from the written impressions. Prior to the trait presentation task, participants were pretested for level of cognitive complexity/differentiation through the completion of both complexity instruments. Results for the direct correlational analysis showed only a weak relationship between the two complexity measures. In comparing the two methods of measuring complexity/differentiation with regards to the impression structure measures, the ICS did not compare favorably with the RCQ. Findings suggest that the sorting instrument may be an indication of hierarchic integration and the RCQ may serve as a measure of differentiation. The sorting measure may hold promise in understanding the content and hierarchical structure of perceivers' cognitive maps of others. The instrument may prove useful in the extension of the differentiation research which is now seeking to learn more about the content of the constructs. (Contains 43 references. A table of data, a list of traits for sorting task, and the overall negative and overall positive valenced impression sets are attached.) (Author/RS)

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# Developing and Testing a Sorting Measure of Interpersonal Cognitive Complexity

by

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ABSTRACT

This study reports on the development of a sorting measure of interpersonal complexity, developed with procedures used by Linville (1982) to develop a self-complexity sorting measure. This measure was compared with the widely-used measure of cogntive differentiation, Crockett's (1965) Role Category Questionnaire (RCQ). Both measures were tested for relationships between the two measures and between each measure and previous-associated impression structure dependent measures. Using a trait presentation model, research participants were presented with target person descriptions. Then they produced subsequent written impressions. Impression structure dependent measures (impression differentiation, impression organizaton, impression valence) were derived from the written impressions. Prior to the trait presentation task, participants were pre-tested for level of cognitive complexity/differentiation through completion of both complexity instruments, the free-response Role Category Questionnaire (RCQ) and the newly-developed sorting measure, the Interpersonal Complexity Sort (ICS.)

Results for the direct correlational analysis showed only a weak relationship between the two complexity measures. In comparing the two methods of measuring complexity/differentiation with regards to the impression structure measures, the ICS did not compare favorably with the RCQ for the impression structure dependent measures. The results suggest that the sorting instrument may be an indication of hierarchic integration and the RCQ may serve as a measure of differentiation. The sorting measure may hold promise in understanding the content and hierarchical structure of perceiver's cognitive maps of others. This instrument may prove useful in the extension of the differentiation research which is now seeking to learn more about the content of the constructs.

# INTRODUCTION

In recent scholarly work, various measures of cognitive structure have become more important to an increasing number of researchers working through a social cognition theoretical perspective. Much of this research has argued that relatively stable differences in the quantitative and qualitative complexity of an individual's cognitive structure can have a pervasive influence on information-seeking strategies, the structuring and interpretation of information, the production of messages, and, even the physical well-being of that individual.

## The Concept of Cognitive Complexity/Differentiation

Cognitive complexity or differentiation refers to an individual difference variable which represents the complexity of the structure of a person's construct system or schema in any particular domain. A highly complex individual perceives more distinctions among stimuli in any particular domain, while the less complex individual would tend to make more global distinctions among stimuli. Burleson and Waltman (1988) have pointed out that the construct of differentiation or complexity has been operationalized in a number of diverse and often inconsistent ways. Such is the case with two different complexity/differentiation instruments which are in use in communication and psychology, a self-complexity instrument utilizing a sorting method (Linville, 1979; 1982) and a free response interpersonal differentiation measure (Crockett, 1965). Scholars working with both instruments suggest that they are measuring cognitive complexity. Both Linville and Crockett have reported that their conceptualization of complexity/differentiation originate, at least in part, from Kelly's (1955) theory of personal constructs. Unfortunately, though, the theoretic reliance on Kelly has not guaranteed consistency in the two operationalizations of the seemingly similar concepts.

Linville (1979) and colleagues (Linville & Jones, 1980) utilizing a sorting method of assessing self-complexity, have demonstrated links between differential levels of cognitive complexity and evaluative extremity. Linville and others have tested the complexity-extremity hypothesis in the domain of the self and objects (nations and chocolate-chip cookies), and in-groups vs. out-groups. This hypothesis argues that the complexity level of the perceiver in the domain of interest and extremity of an evaluation of the target person or object are inversely related.

Since Crockett's (1965) adaptation of the Repgrid instrument resulted in the Role Category Questionnaire (RCQ), this measure has been a staple in constructivist-based research (Delia, O'Keefe, & O'Keefe, 1982; O'Keefe, 1980; O'Keefe & Delia, 1982; Sypher & Applegate, 1984). These researchers have studied evaluative consistency and construct differentiation, organization, relevance, and valence in the context of an impression formation task. In that work, those research participants who have had a more complex cognitive "person" structure were more likely to form more highly differentiated, as well as, bivalent, integrated impressions, thus, more complexly organized impressions, when presented with potentially inconsistent information (Crockett, 1965; Shepherd & Trank, 1989). In an evaluation task, the complex perceiver has exhibited a decreased reliance on the principle of evaluative consistency (O'Keefe, 1980; Shepherd & Trank, 1989). Research efforts have produced considerable evidence of numerous other associations related to higher complexity: more adept social perspective-taking (Hale & Delia, 1976; Sypher & Zorn, 1986); greater quantity and quality of written arguments generated in a persuasive message task (Sypher, Witt & Sypher, 1986); higher persuasive ability (O'Keefe & Delia, 1979; Applegate, 1982); lower apprehension about communication (Neuliep & Hazleton, 1985, but, see Shepherd & Condra, 1988).

Crockett's Conceptualization of Complexity

The coding system developed by Crockett, Press, Delia, and Kenny (1974) to measure complexity describes three different methods of coding for complexity: construct differentiation, abstractness, and integration. However, in the overwhelming majority of research studies, interpersonal complexity has been operationalized as differentiation although hierarchic integration has been the focus of a few studies. Indeed, complexity and differentiation are often seen as synonymous. In support of this operationalization, O'Keefe and Sypher (1981) reported moderate to high correlations between the three scores that can result from RCQ coding. Therefore, differentiation has been viewed as a litmus test and as a reasonable indicator of complexity. If this is true, one would expect other measures of cognitive complexity to correlate with this measure.

The Role Category Questionnaire (RCQ) uses a free response method to elicit descriptions used to measure interpersonal cognitive differentiation. Differentiation is operationalized as the number of qualitatively different constructs present in the individual's descriptions of a liked and a disliked peer.

Linville's Conceptualization of Complexity

Linville's definition of complexity, developed from an information theory perspective (Scott, Osgood & Peterson, 1979), focuses on sets of features rather than individual constructs (Linville, 1979; 1982). If the feature sets are not considered redundant, they are counted as more complex. High feature articulation (the opposite of redundancy) implies an overarching construct that will hierarchically subsume several smaller constructs. Thus, if the feature set is fully articulated, as determined by both the number of aspects used and the degree of relatedness among them, the individual will have a higher complexity score. Linville designed her complexity instrument to measure the extent to which an individual

views him/herself along multiple dimensions. Linville's measure is referred to as a measure of self-complexity.

Linville's self-complexity measure involves a procedure where each subject sorts the same set of cards. The statistic used by Linville to represent complexity (the H Statistic) is designed to partial out the persistent use of one card. Linville's measure of complexity relies on the H statistic as a indicator of structural complexity. The H statistic, referred to as the "index of dispersion," is a measure derived from information theory which reflects the complexity of a sort of a set of objects into categories (Attneave, 1959; Scott, 1969).

Because the RCQ uses a free response methodology, several researchers have speculated about the influence of verbal intelligence (Powers, Jordan, & Street, 1979) or loquacity (Beatty & Payne, 1985) on this measure. Sypher and Sypher (1988) and Burleson and Waltman (1988) have concluded that the RCQ is largely independent of such extraneous influences.

Since both instruments proport to be measuring cognitive complexity, one in the context of self-schemata and on in the interpersonal context, a direct comparison has not been completed. Linville has tested person complexity where she elicited descriptions of both young and 60 year old males for sorting. In this study, she tested the in-group out-group hypothesis using the sorting instrument as a measure of complexity of structure about young and old males.

In a previous comparison study, Sypher (1979) reported that Bieri, Atkins, Briar, Leaman, Miller, and Tripodi's (1966) measure and the RCQ measure of complexity were only marginally related. He reported generally low intercorrelations among several measures of complexity. In addition, Scott, et al. (1979) correlated various complexity measures using the H Statistic with other measures and found no significant relationship unless the

measures were derived from a common instrument. Given the speculation about the influence of the methodology on constructivist-based results and the use of this sorting measure in psychology, a comparison of these two methods is needed.

This study was designed to test the following research questions:

$RQ_1$: Are the two methods of measuring complexity/differentiation (sorting vs. free response) related?

$RQ_2$: For each method, what relationships exist among the differentiation measures and the structural properties of written impression?

## METHODOLOGY

The overall study design incorporated the trait-presentation model used in many impression formation studies. Participants were first presented with target person descriptions. Then they produced subsequent written impressions of the target person. Participants also completed the two measures of cognitive complexity/differentiation.

The study was designed to test two different measures of complexity or differentiation, the RCQ and a "Linville-type" sorting instrument, the Interpersonal Complexity Sort (ICS). Previously-reported relationships were tested to determine which method of measuring cognitive complexity/differentiation was more predictive of these outcomes. First, the Linville self-complexity measure was adapted for an interpersonal domain. Then, both measures were paired with impression structure measures for a direct comparative test across the two different complexity/differentiation instruments.

### Subjects

Ninety-four undergraduate students enrolled in three different universities served as participants in this research study. Students ranged in age from 18 to 35. The mean age of the survey participants was 21.6. Females made up 60% of the sample (56) while males accounted for 40% (38). Fifty-two research participants (55%) were students at a small

private institution in the Mid-East, twenty-eight (30%) were students at a large state university in the East, and the final fourteen participants (15%) were enrolled in a large public university in the Mideast. In all cases, the students volunteered to participate in return for class extra credit.

Experimental Materials

The Role Category Questionnaire. The Crockett Two Peer Role Category Questionnaire (RCQ) was utilized as the free response measure of interpersonal cognitive differentiation. Completing this instrument required the student to describe, in writing, two people whom he/she knows, one of whom is a liked peer and the other a disliked peer. The student was instructed to concentrate on personal characteristics and to spend only five minutes completing the description.

The RCQ has been evaluated as a reliable and valid tool with which to assess interpersonal cognitive differentiation (O'Keefe & Sypher, 1981). Reliability levels for cognitive differentiation with the RCQ have been consistently above .90 (Sypher & Zorn, 1986; Sypher, Witt & Sypher, 1986). Test-retest estimates have varied from .95 for a four-month interval (Crockett, 1965) to .84 and .86 as a result of a four-week estimate (O'Keefe, Shepherd, & Streeter, 1982).

Each peer description was scored for number of distinct constructs used in the impression following procedures outlined by Crockett, et al. (1974). The total score across the two descriptions served as an index of cognitive differentiation. Two coders independently scored 20 randomly selected questionnaires, yielding an interrater reliability coefficient by Pearson correlation of .99.

Interpersonal Complexity Sort. A sorting measure of interpersonal cognitive complexity was developed using procedures outlined by Linville (1982). Linville's sorting

measure contains 33 individual traits which subjects had previously used to describe themselves. A second sorting instrument she utilized contained traits used to describe both young and 60-year-old males. Therefore, for an instrument which could be considered to be comparable to the RCQ, the 33 most frequently-mentioned traits from a previous administration of the free response measure were chosen to represent a wide range of traits that college-age students had used to describe both liked and disliked peers. Previously-completed RCQ's from a peer institution in the Midwest (n = 50) were used as data in order to determine which traits should be included. Each RCQ had been previously coded for number of constructs. Each qualitatively different construct was noted as well as its frequency of occurrence. The final list was analyzed by three independent coders. When two constructs were judged by the three coders to identify identical sentiments, one of the terms was substituted for both. When a construct consisted of a lengthy description of a behavior or trait, a synonymous single adjective or short adjective phrase was substituted. Three independent judges examined the identical and lengthy phrases and suggested their own substitutes. Any disagreements were discussed in order to arrive at a final adjective or adjective phrase. Traits which corresponded to physical traits, gender, intellectual ability, or age were deleted as per Linville's procedures. The final list of traits was rank-ordered according to frequency of occurrence.

Linville used only those traits which occurred in descriptions of both young and 60-year-old males. In this way, she sought to optimize the desired equal latitude in forming trait groupings for each age group. In this measure, the same set of traits must be used to represent characteristics of both liked and disliked peers, resulting in a sorting instrument that paralleled the free response instrument. The ratio between traits that had appeared on liked peer descriptions and disliked peer descriptions was determined by examining several studies

which had used the RCQ measure and had reported a comparison between the mean number of constructs for the liked and disliked peer. (This statistic is not routinely noted because the level of interpersonal differentiation is derived from the sum of the number of constructs in the liked and disliked peer description.) Six sets of such statistics were obtained and reviewed.

The percentage of liked constructs in comparison to the total number of constructs per description ranged from 51.82 to 56.40 with a mean percentage of 54.53. Disliked peer construct percentages ranged from 43.60 to 48.13 with a mean percentage of 45.45 (See Appendix A for a review of all six studies).

Therefore, the ratio of number of constructs used in liked descriptions to number of constructs used in disliked descriptions was determined to be 55/45. Thus, with 33 as the pre-determined number of traits to be used in the sorting task, the first 18 liked constructs and the first 15 disliked constructs from the rank-ordered list were included in the final trait list for the sorting measure. Each of the final set of traits was attached to an index card. (See Appendix B for a complete list of traits.)

An Interpersonal Complexity Sort score was computed by assigning an index of dispersion, the H statistic, to each card sort. A Total Interpersonal Complexity score (TIC) was calculated for each subject using the average of the ICS score corresponding to the disliked peer and the ICS score for the liked peer sort. The following equation was used:

$$TIC = (ICS_d + ICS_l) / 2$$

$$ICS = \log_2 n - (E_i\, n_i \log_2 n_i) / n,$$

where $n$ is the total number of features, and $n_i$ is the number of features that appear in a particular group combination (See (Linville, 1979) for an explanation of H stat computation procedure.) The ICS score is interpreted as the minimum number of independent binary

attributes underlying a person's trait sort. The measure results in a high complexity score when a sort includes a large number of groups which consist of nonredundant features. An ICS may range from 0 to $\log_2 n$ (with 33 traits: $\log_2 33 = 5.04$).

The H statistic has been used to analyze card sorts in the context of self-complexity. For this measure, Weiss (1988) reported a test-retest reliability coefficient of .72 ($p < .001$). In addition, Linville (1985) has suggested that the self complexity score is not affected by level of stress, physical illness or gender. Linville (1987) reported a .71 correlation between the H-Statistic-based SC (self-complexity score) and number of groups included in the sort.

Each subject completed two sorts, one corresponding to a liked peer and a second relating to a disliked peer. Two measures, number of groups formed and number of traites used, were utilized as global measures of complexity.

The Total Interpersonal Complexity Score (TIC) was significantly correlated with the total number of groups ($r = .70$, $p < .05$) and the total number of traits in the sort ($r = .72$, $p < .05$). TIC Scores for men and women were not significantly different ($t_{(92)} = 1.71$, n.s.). An ANOVA with TIC score as the dependent variable and each of the three schools as the independent variables found no significant difference between the TIC scores of students from the three different institutions ($F_{(2,91)} = .89$; n.s.).

Stimulus Materials

The Impression Sets. Two different target person impression sets, one with an overall positive valence and one with negative valence, were presented following completion of the RCQ. The impression sets were developed for this study. Each subject responded to both impression sets. Each impression set described a hypothetical target person using five traits followed by a behavioral description prototypical of each trait. Each set was characterized by an overall positive or negative valence in four of the five traits. The other trait was valence

inconsistent. An inconsistent trait allowed for a dependent measure of integration of inconsistencies.

Impression set traits were chosen from a set generated by Leon (1986). She had previously identified a list of twenty-eight personality traits most frequently employed by students completing the Role Construct Repertoire Test. Through a cluster analysis procedure, Leon identified four groups of traits as representative of distinct personality types. The four clusters of traits were: 1) Polite-Friendly-Considerate; 2) Outgoing-Energetic-Cheerful; 3) Demanding-Stubborn; 4) Conceited-Arrogant-Self-Centered.

Anderson's (1968) scale of likableness was used to choose traits of nearly-equivalent valence strength. Each adjective in Anderson's list has been given a normative rating on a scale ranging from 0 to 6. All but one of the five negative traits reported by Leon (1986), arrogant, had been rated by Anderson's research participants. The other four negative traits were used: conceited (.84), self-centered (.96), stubborn (1.96), and demanding (2.03). Of the six positive traits identified by Leon, all were rated on Anderson's list. The two top-rated traits, considerate (5.27) and friendly (5.19) and the two bottom-rated traits, outgoing (4.12) and energetic (4.57) were chosen as positive traits. The result is a list of positive and negative traits which have approximately equal valence. The negative traits ranged in ratings from approximately 1 to 2 while the positive traits ranged from approximately 4 to 5. Stubborn and friendly, the middle-rated traits in each cluster, were chosen as the valence inconsistent traits. Thus, two sets of traits were developed, one positively-valenced (energetic, friendly, considerate, outgoing, stubborn) and one negatively-valenced (self-centered, conceited, stubborn, demanding, friendly). Confirmation of overall valence was gauged through a pretest where subjects were asked to respond to the evaluative measures. The expected valence differences were observed.

Each trait was followed by a concrete behavioral action prototypical of the trait clusters. Leon's (1986) research provided five concrete actions for each cluster of traits. From these five, one action was chosen which most seemed to fit each trait previously chosen for this research project. Each resulting impression set consisted of five personality traits, four of one valence and one of the opposite valence, each followed by a concrete behavioral action that was prototypical of the personality trait. A copy of both impressions sets is presented in Appendix C. The presentation order of traits and behavioral actions was counterbalanced to control for order effects.

Procedure

All subjects completed the instruments during one small group experimental session in a research facility separate from their regular classrooms. First, the subjects completed the Role Category Questionnaire (RCQ), the free response descriptions of a liked and disliked peer, with order randomly counterbalanced. All subjects were given approximately five minutes to complete each description. Then they completed the packet containing target person descriptions and written impressions with similar instructions. In order to facilitate experimental realism, all subjects were told that the target persons were graduate students in their department who were studying interpersonal communication as a group and had volunteered to participate in this project by being described by their fellow group members. Then, the traits and behavioral descriptions of Member A and Member B were presented, randomly counterbalanced. Following the impression set presentation, the students were asked to provide a written impression of Member A (B) without turning back to the original description, paying particular attention to his/her habits, beliefs, ways of treating others, mannerisms, and similar attributes.

When research participants had finished the impression set packet, which happened at varying intervals, the researcher started them individually on the sorting procedures. Again, the students were asked to identify people they knew quite well and either liked or disliked, first one and then the other, order randomly counterbalanced. They were to indicate a symbol (initials or nickname) for each person in the appropriate blank. Each subject received the packet of 33 randomly ordered cards, each containing the name of one trait or characteristic which had been previously identified as the 33 most frequently occurring traits in a set of RCQ descriptions. Subjects were informed that their task would involve forming groups of traits that "go together, where each group of traits describes an aspect of this person's life." The experimenter instructed students to sort the traits into groups on any meaningful basis. They could form as many or as few groups as desired; to continue forming groups until they felt they had formed the important ones. The same trait could be placed in as many groups as desired, and subjects were given blank cards for this purpose. Subjects did not have to use every trait, only those they felt were descriptive of the liked/disliked peer. These instructions represented a direct replication of instructions given by Linville (1982) for the self complexity sorting instrument. No time limit was put on the task, and subjects took approximately 15 minutes to complete both sorts. When they had completed both sorts, they were escorted from the room by the researcher, debriefed, thanked, and dismissed.

## RESULTS

### Data Coding Results

1) Impression differentiation: Each target person impression was scored for number of distinct constructs used following procedures outlined in Crockett, et al. (1974). Two raters independently scored 18 randomly selected impressions; the Pearson r reliability

coefficient for number of constructs (impression differentiation) was .96. The negative impression set yielded subsequent written impressions with a range of from 0 to 18 constructs. The mean level was 7.27 and the standard deviation was 3.83. The positive impression set target person descriptions contained an average of 7.67 constructs. The standard deviation was 3.9 with a range of 0 to 20. Impressions resulting from the positive set did not significantly differ from impressions from the negative set in their level of differentiation (Paired $t_{93} = -1.35$; n.s.).

2) Impression Valence: a measure of polarization derived from the written impression task. Each impression was coded for the number of positive, negative, and indeterminate traits. O'Keefe and Delia (1981) provided rules for coding valence. Impression valence was calculated by deriving a ratio of the number of positive traits to the total number of positive and negative traits. Then, this ratio was subtracted from .5. The absolute value of that result was defined as the impression valence (Crockett, 1965). Impression valence scores can range from 0 to .50. Those impressions composed of only positive or only negative constructs, uni-valenced, would result in the most extreme impression valence scores.

Two coders independently scored eighteen impressions for number of positive, negative and indeterminate traits. For a random sample of 122 valence judgments, the two independent coders recorded 98% exact agreement. Cohen's kappa for coding into positive, negative or indeterminate valence was .95 (Cohen, 1960). The resulting impression valence scores were correlated at a very high level, $r = .99$.

The negative impression set produced a mean impression valence of .36 with a standard deviation of .15 while the positive impression set provided a mean of .34 with a standard deviation of .17. A paired t-test showed no significant difference in the average

valence of the negative impression compared to the average valence of the positive impression (Paired $t_{93}$ = .77; n.s.).

3) Impression organization: The organization of impression constructs was measured according to a modification in Crockett, et al.'s (1974) system that was used by Johnston (1989). The system measures the extent to which the impression constructs are variable and whether the inconsistencies in valence have been recognized and/or explained. The coding system contains three categories: 1) construct valence consistency among constructs; 2) construct valence variability among constructs with no attempt to reconcile the inconsistency of the opposite valence; or 3) construct valence variability with external (situational) and/or internal (dispositional) explanations and resolutions to attempt to reconcile the variability. Crockett, et al. (1974) suggests that reconciliation may be attempted through reinterpretation, proposed differences among observers, variations in contexts, role relationships, or dispositional qualities. Each impression was judged to represent one of the three categories.

Two raters independently coded a subset of eighteen randomly selected impressions for level of organization, ranging from 1 to 3. The reliability assessment resulted in 72% exact agreement between the two raters in the assignment of impressions to organizational level; kappa .57 (Cohen, 1960). Because of the low reliability coefficient, a second random sample of sixteen impressions were coded, resulting in 81% exact agreement; kappa = .71. Interrater reliability for the second sample was considered acceptable. Before coding of the remainder of the impressions, differences between raters were reconciled.

Research Question One

Research question 1 concerned the extent of relationship between the two methods of measuring cognitive complexity/differentiation. Cognitive complexity/differentiation scores derived from the Role Category Questionnaire (RCQ) and the Interpersonal Complexity Sort

(ICS) were significantly correlated. For the RCQ, the total number of constructs served as the measure of complexity, and for the ICS, the Total Interpersonal Complexity Score, the average H Statistic across two sorts was computed. Pearson r between the two cognitive structure measures was .25 ($p < .01$). This result is consistent with previous research where different measures of cognitive complexity have been related only moderately (O'Keefe & Sypher, 1981). However, since these two measures are not derived from the same method, that is, the ICS is a sorting measure and the RCQ is a free response measure, the common association cannot be attributed to similarities in method.

The TIC score was related significantly to both number of traits used in the sort ($r = .70$, $p < .00$) and the number of groups formed ($r = .72$, $p < .00$). The RCQ measure of differentiation was not significantly related to number of groups, as the ICS had been ($r = .18$, $p < .08$). Number of traits used by the subject in the ICS procedure was correlated significantly with their RCQ score ($r = .44$, $p < .00$). The strength of this correlation was not nearly equal to the strength of the correlation obtained for number of traits with the ICS score. Thus, the RCQ and the ICS are related marginally, but, they do not appear to be measuring identical aspects of cognitive complexity.

While the number of traits used in the ICS was correlated significantly with the raw RCQ score, the number of groups was not. This result seems theoretically consistent. The H Stat as a measure represents each group in its calculation. The RCQ does not consider grouping procedures, but, rather, a count of the number of distinct constructs used. So, as a rough comparison, the raw number of traits used in each sort might very well approximate the extent to which the same subject would use a large number of his/her own words in a free response measure. The subjects completed the free response task first, so, the correlation is

not a result of trait priming.

While the two measures derive from one of the same theoretical roots, Kelly's theory of personal constructs, the operationalization of that root concept has not been similar enough to produce similar measurements.

Research Question Two

As in previous research, regardless of set valence, the RCQ measure of differentiation is significantly correlated to impression differentiation (Positive set: $r = .22$, $p < .03$; Negative set: $r = .33$, $p < .00$). As subject differentiation increased, the differentiation of the written impression which the subject produced increased concurrently. The correlation between impression differentiation and cognitive differentiation is stronger in the negative set, though not significantly different (Fisher's $z = .86$; n.s.).

This across-valence result was not replicated for the H-stat-based measure of complexity. The H stat measure of complexity was significantly correlated with impression differentiation resulting from the negatively valenced impression set ($r = .24$, $p < .02$), but was not significantly correlated with the level of differentiation in the impression from the positively valenced set ($r = .15$, $p < .14$).

Impression organization was not correlated significantly with either the free response or the sorting measure of complexity/differentiation. A Chi Square analysis revealed no significant difference between the distributions for the three levels of organization across the two valence conditions (Chi Square = 4.31; df = 2; n.s.)

Impression valence has been used traditionally in communication research as a measure of evaluative consistency. Cognitive differentiation from the RCQ correlated significantly with impression valence in the negative set ($r = -.22$; $p < .03$). The

correlation indicated that those perceivers higher in complexity exhibited less tendency toward producing uni-valent impressions. High complex perceivers produced more bi-valent impressions. This result replicated previous results (O'Keefe & Delia, 1981). The ICS was correlated also with impression valence ($r = -.19$; $p < .06$) at a marginally significant level. The positive set did not produce significant correlations between either the RCQ ($r = -.04$, $p < .66$) or the ICS ($r = .002$, $p < .90$).

## CONCLUSION

This research focused on two different but related questions. First, are the two types of complexity/differentiation measures used in this research related to each other? Second, can relationships be documented between each of the complexity measures and outcome measures which had been associated with the RCQ in previous research efforts? In each of the tests, a sorting measure of complexity/differentiation (ICS) was compared to a free response (RCQ) measure of complexity/differentiation.

Previous research has identified problems in the lack of comparability between different measures of cognitive complexity. The direct comparison between the two measures in this study supported this concern. The sorting measure was derived from constructs identified previously on the same type of free response measure used in this study. But, even with this common base, the two measures were correlated at a weak level. Clearly, the demand characteristics of each measure (sorting vs. free response) produced measures of different aspects of cognitive structure.

That the free response measure and the sorting measure are similar at all suggests that there may be some overlap in the way the two instruments measured complexity. However, the two instruments are clearly tapping into distinct aspects of cognitive complexity. A large value for the H Statistic (the measure of complexity for the ICS) represents, in part, the

grouping procedures of the trait sorter. The H Statistic, as a measure with links to information theory, seems to focus on the extent of the interdependence within the trait sort structure by partialing out any redundant use of traits. Thus, this measure may be a better indicator of integration rather than differentiation. On the other hand, measurement procedures for the RCQ depend on counting individual traits. This measure more clearly represents the extent of trait differentiation. Crockett (1965) argued that cognitive differentiation should serve as a valid indicator of other qualities of cognitive structure such as integration or abstractness. If the sorting instrument is an indication of hierarchic integration and the RCQ is a measure of differentiation, the two concepts may not be valid indicators of each other.

When comparing the two complexity measures to outcomes typically used in communication research, the RCQ free response measure was correlated in the expected manner with impression differentiation. A significant positive correlation was found between cognitive differentiation and impression differentiation in both positively and negatively valenced impression sets. The sorting measure showed a significant correlation between complexity and impression differentiation in the negative set, but not in the positive set. So, the sorting measure did replicate associations between cognitive differentiation and resultant impression differentiation which have been reported previously with the free response measure, but only in the negatively valenced impression set. In comparing the two methods of measuring complexity/differentiation with regards to the impression structure measures, the ICS did not compare favorably with the RCQ for the impression structure dependent measures. Communication researchers will not want to abandon the tried and true RCQ in favor of this sorting measure.

The utility of the hierarchical conception of complexity and the sorting method of

measuring complexity in communication research may be found in understanding the content and hierarchical structure of perceiver's cognitive maps of others. The sorting method could be used to determine the overarching schema that holds constructs together, rather than informing the standard operationalization of differentiation as the number of distinct constructs.

Thus, this procedure may prove useful in the extension of the differentiation research which is now seeking to learn more about the content of the constructs (Sypher & Zorn, 1985; 1988). In constructing the sorting measure for this study, previous RCQ's were analyzed for the frequency of use of constructs. Results across many different peer descriptions were remarkably similar. For example, the most frequently used trait in the disliked peer descriptions was "self-centered." This trait was used three times more frequently than the second most frequently occurring trait. Virtually every disliked peer description made some reference to the concept of "self-centeredness." Similarly, in the liked peer description, the number one ranked trait was "considerate." This trait was used twice as frequently as the second ranking trait.

Intriguing similarities occur in previous research. Sypher and Zorn (1985; 1988) reported that the same two constructs, "self-centered" and "considerate" were prototypic in descriptions of liked and disliked co-workers, respectively. Research should proceed along these lines. More samples of RCQ's should be analyzed for content as suggested by Sypher and Zorn (1988). Analysis for content would allow for content sorting. If these card sorts were analyzed using a hierarchical cluster analysis method, the organization of the constructs could be seen. Perhaps the importance of these two concepts, self-centered and considerate, (or something similar) would emerge as a sort of superordinate interpersonal judgment criterion, a fundamental basis for an evaluation of like or dislike for another individual.

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Appendix A

Percentages of Liked/Disliked Constructs Reported in Previous Studies

| STUDY | TOTAL # CONSTRUCTS | LIKED CONSTRUCTS mean / % | DISLIKED CONSTRUCTS mean / % |
|---|---|---|---|
| #1[a] | | | |
| timed session | 22.62 | 12.16 / 53.76 | 10.45 / 46.20 |
| untimed session | 26.63 | 14.77 / 55.46 | 11.85 / 44.50 |
| #2[b] | 24.49 | 13.58 / 55.45 | 10.91 / 44.55 |
| #3[c] | 26.43 | 14.10 / 53.35 | 12.33 / 46.65 |
| #4[d] | 21.48 | 11.13 / 51.82 | 10.34 / 48.13 |
| #5[e] | 21.79 | 12.29 / 56.40 | 9.50 / 43.60 |

[a]O'Keefe, Shepherd, & Streeter (1982)
[b]DeLancey & Swanson (1981)
[c]Burleson, Applegate, & Neuwirth (1981)
[d]Babrow & O'Keefe (Cited in O'Keefe (1983))
[e]Sypher & Zorn (1988)

## Appendix B

### List of Traits for Sorting Task

1. Bossy
2. Broad-minded
3. Cold
4. Conscientious
5. Considerate
6. Cruel
7. Emotional
8. Extroverted
9. Friendly
10. Fun-loving
11. Generous
12. Genuine
13. Good friend
14. Good listener
15. Honest
16. Humorous
17. Inconsiderate
18. Insecure
19. Irritating
20. Judgmental
21. Lazy
22. Liar
23. Manipulative
24. Moody
25. Obnoxious
26. Organized
27. Pessimistic
28. Respectful
29. Self-centered
30. Self-confident
31. Sensitive
32. Spoiled
33. Unselfish

Appendix C

Target Person Impression Sets

Overall Negative Valenced Impression Set:

Five study group members described Member A as follows:

DEMANDING: Doesn't listen to others.

SELF-CENTERED: Is disparaging toward others.

FRIENDLY: Welcomes interaction.

CONCEITED: Lacks sensitivity and attentiveness to the feelings and needs of others.

STUBBORN: Resists change in behavior and attitude.

Overall Positive Valenced Impression Set:

Five study group members described Member B as follows:

OUTGOING: Welcomes new persons to a group.

ENERGETIC: Laughs, tells jokes, teases people.

FRIENDLY: Welcomes interaction.

CONSIDERATE: Is an attentive listener.

STUBBORN: Is argumentative -- constantly supplying reasons.